

REMARKS / DISCUSSION OF ISSUES

Claims 1 – 3, 5 – 11, 13 – 19 and 21 – 23 are pending in the application.

In the present amendment, claims 4, 12 and 20 are cancelled without prejudice, and claims 1, 9 and 17 are amended. The support for the claim amendment may be found in Applicants' specification, page 3, lines 22 – 33, and page 4, lines 5 – 32. No new matter is added.

35 U.S.C. 103

Under 35 U.S.C. 103(a), the Office Action rejects claims 1 – 23 over U.S. Patent 6,806,898 by Toyama et al. (Toyama) in view of U.S. Patent 6,707,933 by Mariani et al. (Mariani).

Applicants submit that for at least the following reasons, claims 1 – 23 are patentable over Toyama and Mariani, either singly or in combination.

For example, claim 1, in part, requires:

“estimating an orientation of said head in said image using a pattern recognition technique, said pattern recognition technique comprises a classification technique.”

The Office Action, page 4, asserts that “determining the orientation of the head necessarily involves a technique that classifies, i.e. ascertains, the pose of the head using any known method.” Applicants respectfully disagree with such assertion.

Applicants submit that determining the orientation of the head does not necessarily involve a classification technique. Toyama, column 6, lines 53 – 68, discloses a number of techniques that are not necessarily classification techniques. For example, Applicants submit that motion analysis (Toyama, column 6, line 59) involves movements and that movements can be denoted by continuous variables and thus, such motion analysis does not necessarily require any classification. Applicants further submit that nothing in Toyama explicitly teaches or suggests the use of any classification techniques. Although Toyama discloses the determining of the head pose, it does not disclose the techniques used are classification techniques. Moreover, in Toyama, Fig. 8, the head pose determining step 810 apparently only serves to provide input to step 820 where the virtual head model is oriented

according to the head pose. Applicants submit that there is no need to classify the head pose if the head pose input data is used to orient the head model. Therefore, Toyama fails to disclose the claimed feature: estimating an orientation of said head in said image using a pattern recognition technique, said pattern recognition technique comprises a classification technique.

Furthermore, claim 1, in part, also requires:

“computing a three dimensional model of a face surface of said human using a computer vision technique based on the result of the classification technique.”

Applicants submit that nothing in Toyama teaches or even suggests that the computer vision technique is based on the result of the classification. Applicants further submit that Toyama, Fig. 8, column 11, lines 46 – 63, discloses that the virtual head model is oriented according to the head pose. This clearly suggests that a modeling technique is already defined before the head pose is ever determined or classified. Toyama apparently requires a virtual head model be completed without ever classifying the head pose. The procedures 820 – 826 in Fig. 8 of Toyama clearly show that a head model is created independent of any classification. Therefore, Toyama fails to disclose the claimed feature: computing a three dimensional model of a face surface of said human using a computer vision technique based on the result of the classification technique.

Applicants further submit that Mariani does not in any way cure the defects present in Toyama as discussed above. Therefore, claim 1 is patentable over Toyama and Mariani, either singly or in combination.

Similarly, independent claim 9 requires:

“estimates an orientation of said head in said image using a pattern recognition technique, said pattern recognition technique comprises a classification technique,” and

“computes a three dimensional model of a face surface of said human using a computer vision technique based on the result of the classification technique.”

Also, independent claim 17 requires:

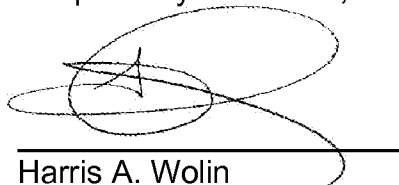
“estimates an orientation of said head in said image using a pattern recognition technique, said pattern recognition technique comprises a classification technique,” and

“computes a three dimensional model of a face surface of said human using a computer vision technique based on the result of the classification technique.”

Applicants essentially repeat the above arguments for claim 1 and apply them to claims 9 and 17 pointing out why the combination of Toyama and Mariani fails to disclose the above claimed features. Therefore, for at least the foregoing, claims 9 and 17 are patentable. Claims 2, 3, 5 – 8, 10, 11, 13 – 16, 18, 19 and 21 – 23 are also patentable because at least they respectively depend from claims 1, 9 and 17, with each claim containing further distinguishing features. The rejection of claims 4, 12 and 20 is moot because they are cancelled. Withdrawal of the rejection of claims 1 – 23 under 35 U.S.C. 103(a) is respectfully requested.

In view of the foregoing, the applicants respectfully request that the Examiner withdraw the objection(s) and/or rejection(s) of record, allow all the pending claims, and find the application in condition for allowance. If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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